

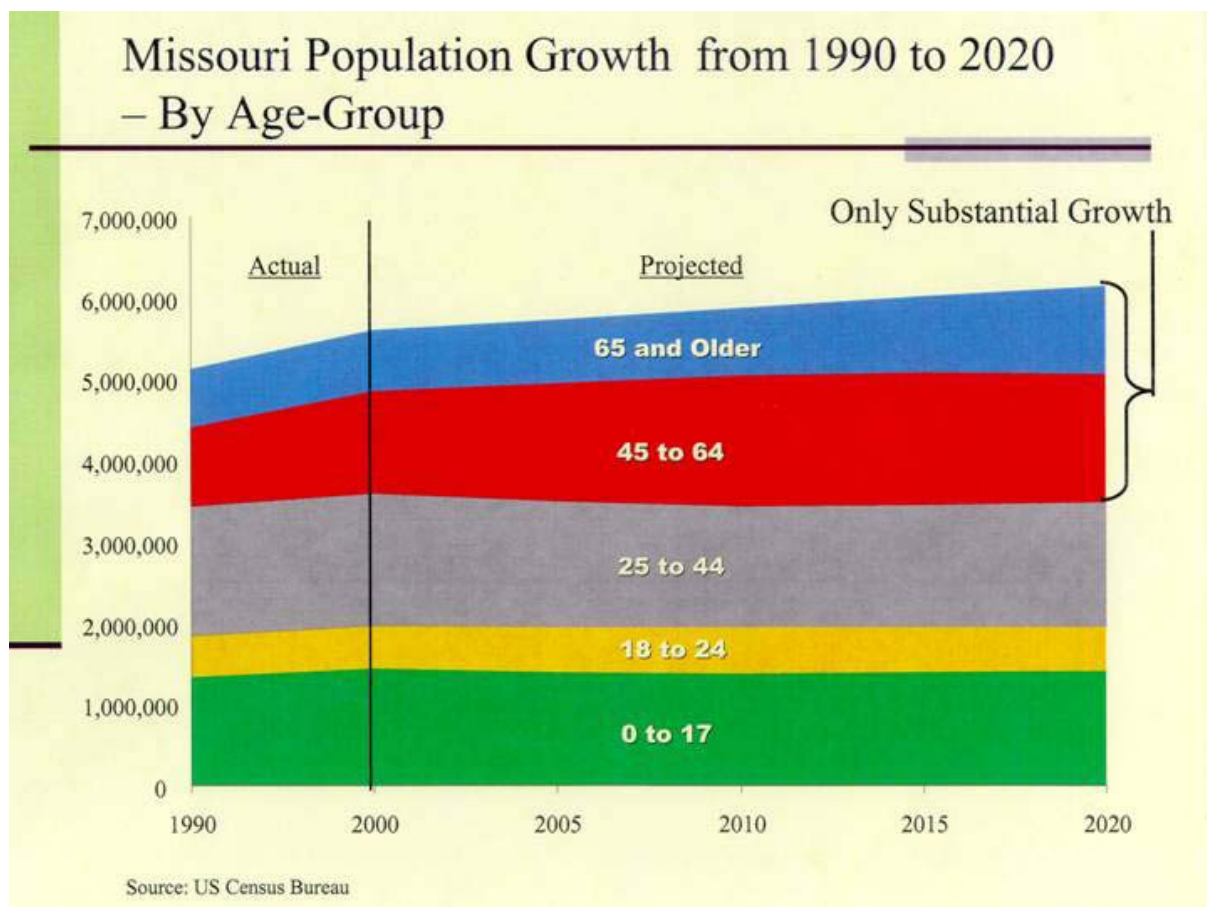
DRAFT State of the Workforce Report (SOTWF) **DRAFT**

Higher/Postsecondary Education Section
Prepared for the Division of Workforce Development
Department of Economic Development

This section on Missouri higher/postsecondary education provides a context for the challenges facing Missouri's system of higher/postsecondary education. The report describes issues and provides information related to the preparation of Missouri high school graduates and college students for becoming members of the state's future workforce. Participation in state's higher/postsecondary education and training delivery system, the credentials held by Missouri citizens and participation by the state's public college and university graduates in the state's workforce are discussed also. The report ends with the impact on the state's economy of raising the educational attainment of Missouri citizens.

Missouri's Challenging Context for Higher/Postsecondary Education

An important context for the challenges facing Missouri and its system of higher education is the changing demographics of the state. For example, Missouri's Hispanic population is increasing both in number and proportion of the population. As importantly, however, is how the age of Missourians will affect the state's future workforce development demands.



As the above chart of Missouri's population projections show, the only projected growth of the state's population through year 2020 will be among Missourians between the ages of 45 and 65 and older. The projections for those who are of typical college going age, 18 to 24, are flat as is the projection for typical elementary and secondary students, (through age 17).

With no increases in the population of those who are typically of elementary and secondary and college age, Missouri will need to sustain its commitment to accessible and high quality education at all levels and ensure that all students succeed to the best of their ability in the state's education and training delivery system. Providers of education and training will no longer be able to simply let students of all ages fall out of the system. Retention will be demanded if Missouri is to have the number of qualified individuals graduate from the state schools, colleges and universities.

The only increase in the state's population is among those working age-adults who are between the ages of 45 and 64, and older. The demands for new skills and retraining will require fuller attention and commitment to lifelong learning and continuing professional development of Missouri's working adults. This may also be the only area of real growth for the state's providers of education and training beyond high school.

The challenge for Missouri is significant. The level of educational attainment of a state's population is one measure of how prepared the state is to compete in a knowledge-based global economy. Based on the 2000 U.S. Census, Missouri has some distance to go before the educational attainment level of its citizens is equal to what the national average was in 2000.

Educational Attainment of Missouri Citizens

Level of Educational Attainment	Percent of 25 to 64 Year Olds Missouri	Percent of 25 to 64 Year Olds Nation
Some College But Not Degree	23.7 %	22.3 %
Associate Degree	5.9 %	7.2 %
Bachelor's Degree	24.2 %	26.5 %
Graduate or Professional Degree	8.3 %	9.4 %

Source: 2000 U.S. Census

The level of educational attainment of a state's population is not only important to the ability of its citizens to continually learn and improve upon their existing skills, but has an impact on individuals' earnings and the state's average per capita income. For example, the 2000 U.S. Census reported that Missouri's average per capita income in 1999 was \$19,936 compared to a national average per capita income of \$21,587. This suggests the state's efforts in preparing its workforce now and in the future is vital to the competitiveness of the state's workforce and its economic revitalization.

Preparing for the Workforce

Whether high school students enter the workforce directly out of high school or enroll in one of the state's public or independent colleges or universities or proprietary schools, there is not much difference in what studies they take in high school to adequately prepare them for the knowledge-based economy or for college. The study of English,

mathematics, and science is as important as the ability to read and comprehend what is read. A recent report noted that only 40 percent of the nation's working adult population has some college, while 80 percent of existing and future jobs require some further education and training beyond high school.

One measure of how well students are preparing for success in the workplace or in college is the ACT Assessment. While this assessment has its limitations, the annual report of ACT-tested high school seniors includes information about what students are doing in high school that contributes to their success as prospective employees or college students. The report also allows Missouri to compare its high school students to those in other states.

High School Core Curriculum

Empirical evidence overtime has demonstrated that high school students who take four years of English or more, three years or more of mathematics, three or more years of natural sciences, and three or more years of course work in the social sciences succeed at higher rates in college than students who are not exposed to such courses in high school. Increasingly employers are talking about the need for new and incumbent employees need to have a better command of the English language, stronger skills in mathematics and science, and better reading and comprehension skills. These can be learned in high school by exposure to the same types of courses students take to prepare for admission to college.

While the ACT Assessment analysis is limited in most states to those high school seniors who take the test, both Illinois and Colorado have begun to require all high school students to take the ACT in the 11th grade to better understand how well their high school students are prepared to enter the workforce or college.

Proportion of High School Seniors Taking the ACT and, of Those Tested, the Proportion Taking the ACT Core Courses in High School (Source: ACT Annual Report of 2003 ACT-Tested High School Seniors)

State	Percent of 2003 High School Seniors Taking the ACT Assessment	Percent of 2003 High School Seniors Taking the ACT Assessment and Report Taking the Core Courses
Missouri	69 %	58 %
Iowa	66 %	66 %
Nebraska	73 %	67 %
Kansas	76 %	66 %
Oklahoma	69 %	59 %
Tennessee	74 %	62 %
Arkansas	73 %	71 %
Illinois	100 %	41 %
Kentucky	73 %	59 %

Note: ACT High School Core Curriculum includes: four or more years of English, three or more years of mathematics, three or more years of social sciences, and three or more years of natural sciences.

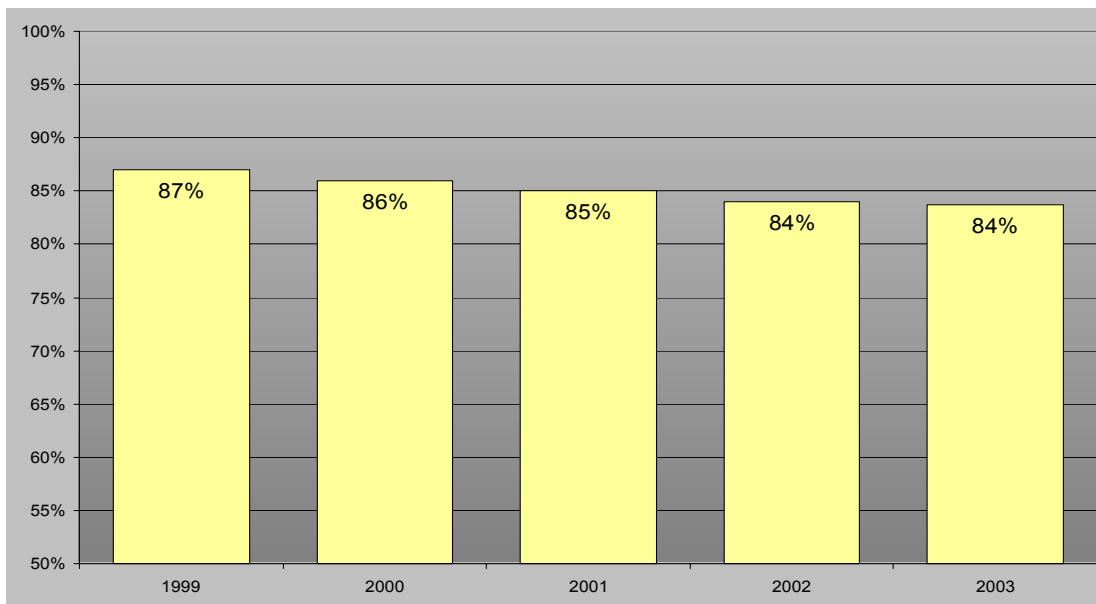
While not definitive, these data suggest that states like Iowa, Nebraska, Kansas, Tennessee, and Arkansas do a better job in preparing their high school graduates for either immediate entry into the workforce or college than those states, including Missouri, with lower percentages of their students taking the ACT Assessment and report taking the recommended core courses in high school.

Study of English, Mathematics, Social Sciences, and Natural Sciences in High School

In the global economy and with emerging knowledge-based businesses and industries, what students take in high school can be an important measure of the quality of Missouri's future workforce. Following are charts showing the percentage of Missouri ACT-tested high school seniors who report taking the ACT core English, mathematics, social science, and science.

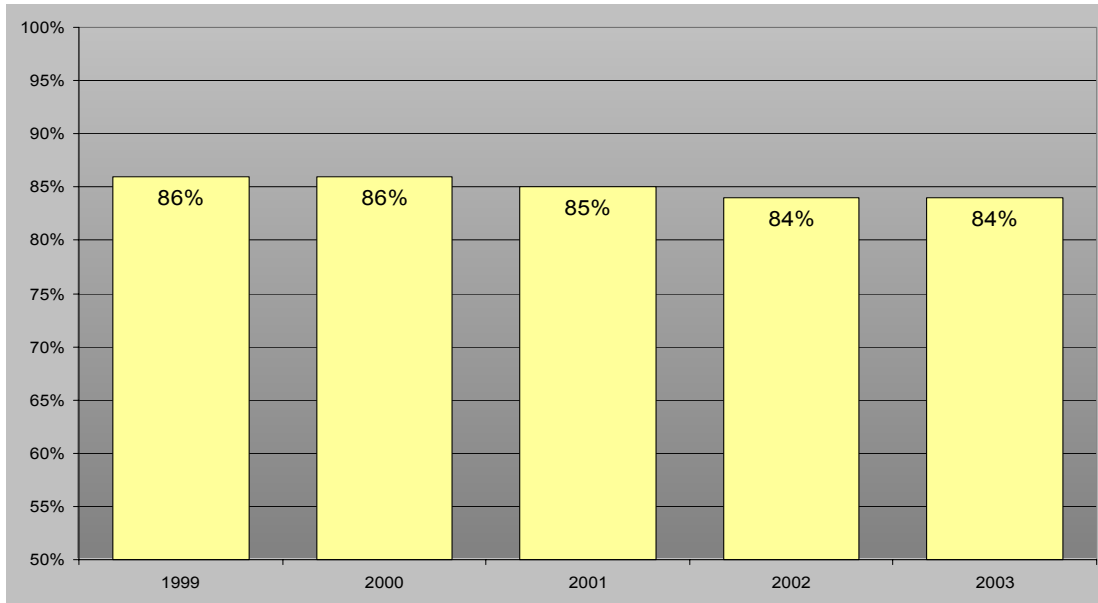
While the following charts from Missouri's annual ACT report on 2003 ACT-tested seniors show declines in the percentage of seniors reporting that they took the recommended high school core curriculum, the percentage of Missouri high school seniors taking the ACT Assessment has remained fairly constant over the last several years: 67 percent in 1999; 69 percent in 2000; 70 percent in 2001; 68 percent in 2002; and 69 percent in 2003.

State Percentage Completing Four Or More Years In English



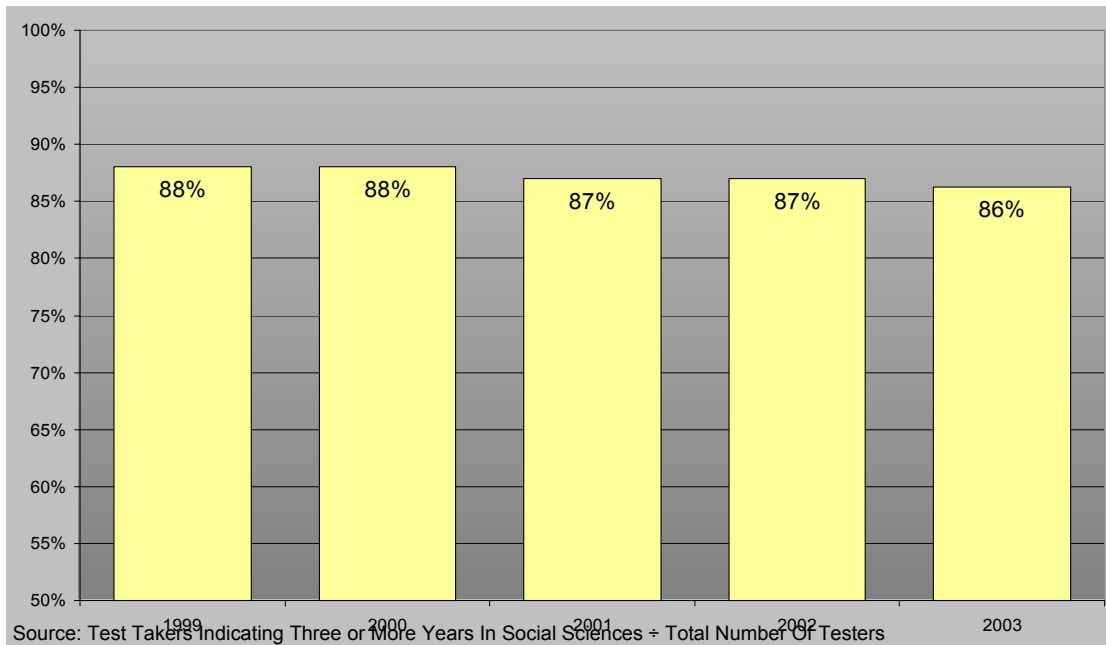
Source: Test Takers Indicating Four or More Years In English ÷ Total Number Of Testers

State Percentage Completing Three Or More Years In Math



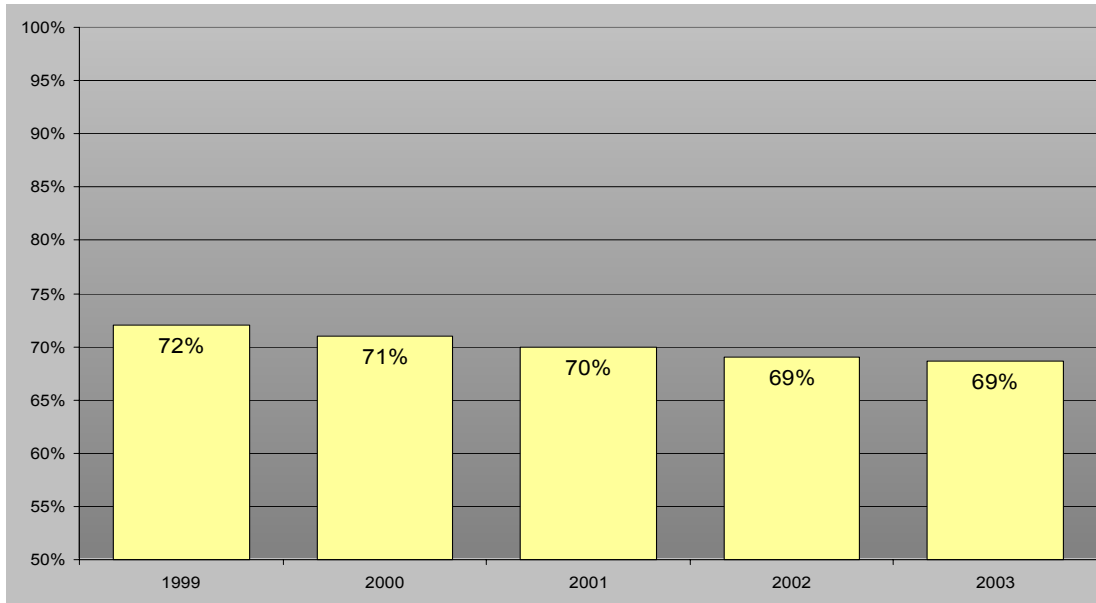
Source: Test Takers Indicating Three or More Years In Math ÷ Total Number Of Testers

State Percentage Completing Three Or More Years In Social Sciences



Source: Test Takers Indicating Three or More Years In Social Sciences ÷ Total Number Of Testers

State Percentage Completing Three Or More Years In Science



Source: Test Takers Indicating Three or More Years In Science ÷ Total Number Of Testers

As the above charts demonstrate, Missouri has not made any progress in the last several years in increasing the proportion of ACT-tested seniors, and probably nonACT-tested seniors as well, who take upper level mathematics and science in high school. It will be difficult for Missouri to sustain its competitiveness in certain industries, e.g. life sciences, if students do not take more mathematics and science in high school.

Remediation

Within the public sector of colleges and universities, the state's public two-year community colleges enroll the vast majority of students requiring remediation during their first year. It is disturbing to note that among all full- and part-time, degree- and non-degree seeking freshmen enrolling in Missouri's public two- and four-year colleges and universities, nearly one-out-of-five freshmen are required to enroll in remedial mathematics. Between 13 and 14 percent of these freshmen are required to take remedial English. The percentage of freshmen required to enroll in remedial reading courses, however, has slightly declined in the last couple of years, from nine percent to six percent.

Fall Semester	Total Number of Freshmen	Percent Enrolled Remedial Mathematics	Percent Enrolled Remedial English	Percent Enrolled Remedial Reading
1997	18,385	20 %	13 %	8 %
1998	19,047	21 %	14 %	9 %
1999	19,410	21 %	14 %	8 %
2000	19,755	20 %	13 %	6 %
2001	21,124	21 %	13 %	6 %
2002	21,910	23 %	13 %	6 %

Source: Missouri High School Graduates Performance Reports, Missouri Department of Higher Education.

Missouri's A+ program is designed to provide a two-year scholarship incentive for students to pursue their postsecondary education in a Missouri public two-year college or area vocational school. These students are required to graduate from a designated A+ high school, take a rigorous course of study in high school, and graduate from high school with at least a 2.5 grade point average. Of concern is the proportion of these A+ students enrolled in the state's public two-year colleges who require remediation.

**Proportion of A+ Missouri High School Graduates Attending the State's
Community Colleges Enrolled in Remedial Courses**

Fall Semester	Number of A+ Students Enrolled in Public Two-Year Colleges	Percent Enrolled Remedial Mathematics	Percent Enrolled Remedial Science	Percent Enrolled Remedial Reading
1997	290	26 %	21 %	16 %
1998	798	32 %	18 %	12 %
1999	1,690	28 %	14 %	9 %
2000	2,523	27 %	18 %	8 %
2001	3,244	30 %	17 %	8 %
2002	3,970	Not Available Until Fall 2003	Not Available Until Fall 2003	Not Available Until Fall 2003

Source: Enhanced Missouri Student Achievement Study, 1997, 1998, 1999, 2000, 2001, 2002

Retention

There are a variety of reasons why students do not return to college after their first year of study. Factors such the school they attended was the wrong type of school for what they wanted to study and the lack of financial resources to pay for a second year of college are among those factors.

The following chart shows the second year return rate for those freshmen enrolled in the state's public two- and four-year colleges and universities in Fall 1997 through Fall 2001. For each entering freshman class in the fall, one-out-of-four freshmen (25 percent) do not return the following fall to continue their studies as sophomores. Some of these students may have received in one year of college all of the college education they feel they need or want. Some of these students may not have known what to expect when they got to college and simply were not prepared for the differences between what they experienced in high school and their classroom experiences in college. Many of these students may have taken out student loans to finance the cost of college attendance, received a federal or state financial aid grant, and consumed the amount of state tax revenue appropriated for and allocated to the institution they attended to subsidize with public funds the cost of operating that institution during the year.

Fall Semester	Total Number of Freshmen	Percent Returning For The Following Fall Semester
1997	18,385	74 %
1998	19,047	75 %
1999	19,410	75 %
2000	19,755	75 %
2001	21,124	75 %
2002	21,910	Data Not Available Until Fall 2003

Source: Missouri High School Graduates Performance Reports, Missouri Department of Higher Education, 1997, 1998, 1999, 2000, 2001

Quality Teaching and Learning

Issues of quality teaching and learning on all levels of education and training are not new subjects for Missouri and the nation. In March 2002, the K-16 Taskforce released its report and recommendations in *Achievement Gap Elimination*. In 2004, Missouri's Business and Education Roundtable, and advisory group of business, education, and elected officials, presented its report to Governor Holden with recommendations for improving the quality of teaching and learning by Missouri's classroom teachers and students.

The preparation and continuing professional development of the state's classroom teaching workforce are vital state interests. Missouri's public K-12 schools employ approximately 65,000 teachers who represent 2.2 percent of the state's three million member workforce. Teachers are the largest segment of the professional workforce in the state.

Many of Missouri's classroom teachers and other school personnel graduated with degrees from various education programs from one the state's public colleges and universities between 1994-95 and 2001-02.

1994-95 to 2001-2002 Education Program Graduates from Missouri's Public Colleges and Universities and Percentage of Graduates Working in Missouri in 2002

Degree Level	Number of Public College & University Graduates 1994-95 to 2001-02	Number of 1994 to 2002 Graduates Working in Missouri in 2002	Percent Graduates Working In Missouri
One and Less Than Two-year Certificates	4	2	50 %
Two-year Certificates and Associate Degrees	409	316	77 %
Bachelor	15,553	12,115	78 %
Post Bachelor	89	64	72 %
Master's and Education Specialist	12,490	9,697	78 %
Doctorate and First Professional	653	385	59 %
Total	29,198	22,579	77 %

Source: Missouri Enhanced Missouri Student Achievement Study and Data Maintained by the Missouri Department of Labor

These teachers educate the vast majority of the current and next generation of workers in Missouri. Consequently, the continuing professional development of classroom teachers is an important workforce development issue. In contrast to other countries with centralized coordination of teacher professional development (TPD), TPD in Missouri and across the country is provided by a diverse group of organizations. In Missouri teacher professional development is provided by:

- Nine Regional Professional Development Centers (RPDCs), eight of which are housed on public university campuses;
- School districts;
- Statewide and national professional organizations for teachers;
- State-wide telecommunications networks, which tend to focus on TPD in technology or technology-based TPD;
- Two Advanced Placement Institutes for teachers of Advanced Placement (AP) courses (Truman State University and Southeast Missouri State University);
- Summer academy for middle school mathematics teachers; and
- Discipline-based professional societies.

Others involved in teacher professional development include:

- Government and non-profit organizations:
 - USDE's ten Regional Educational Laboratories (see <http://www.relnetwork.org/>)
 - NASA, Department of Agriculture, Department of Interior (Nat'l Park Service), and Department of Energy (national labs, such as Los Alamos, Argonne, Oak Ridge) and others
 - National Research Council/National Academy of Sciences
 - Smithsonian Institution

- Other state and regional museums and informal learning centers (e.g, zoos, botanic gardens)
- For-profit education businesses also provide professional development, such as:
 - Textbook providers who offer TPD to districts that adopt their books or curricula
 - The College Board, which offers AP workshops to teachers
 - Other test-development organizations, which provide professional development to teacher-leaders to assist with district-wide implementation
 - For-profit technology businesses that provide computer training courses to teachers and administrators

Of Missouri's approximately \$15 million annual appropriation for TPD, more than \$2 million is invested in the nine Regional Professional Development Centers (RPDCs). These organizations provide TPD on a wide range of topics such as leadership development, school reform, and student assessment. However, since the underlying purpose of TPD is to improve student achievement, the RPDCs must demonstrate to Missouri taxpayers that their activities translate into improved student scores on Missouri Assessment Program (MAP) tests (Missouri tests administered at different elementary and secondary education grade levels in selected areas of study, e.g., mathematics). According to a recent evaluation, this is only the case for, at most, five of the nine RPDCs. In fact, at four of the RPDCs, schools in which K-12 faculty members were judged to participate in professional development at below-average rates taught students that achieved *higher* MAP scores than their counterparts at high-participation schools. (Research Report #801, 2000 – 2001 RPDC Program Evaluation. Prepared for the Missouri Department of Elementary and Secondary Education by Southwest Missouri State University Institute for School Improvement, June 2001.)

In contrast to the RPDCs, Missouri has other TPD programs that have been able to demonstrate a direct, positive impact on student achievement. One such program is the "enhancing Missouri's Instructional Networked Teaching Strategies" (eMINTS) program, which is supported by a combination of federal grants and e-rate reimbursements to K-12 school districts. eMINTS teachers participate in more than 200 hours of professional development in technology use and inquiry-based, student-centered pedagogical strategies. The percentage of eMINTS students scoring in the top two levels on the MAP mathematics and social studies exams is higher than students in non-eMINTS classrooms in the same school, and significantly above the state average. The achievement differences are even greater for eMINTS students receiving free and reduced lunch (FRL), compared to non-eMINTS FRL recipients. In the upcoming school year, there will be more than 400 eMINTS teachers in 195 of Missouri's 524 school districts, and the investment in their professional development is expected to have a continued, positive influence on student achievement on the MAP tests.

Participation in Postsecondary Education and Training Programs

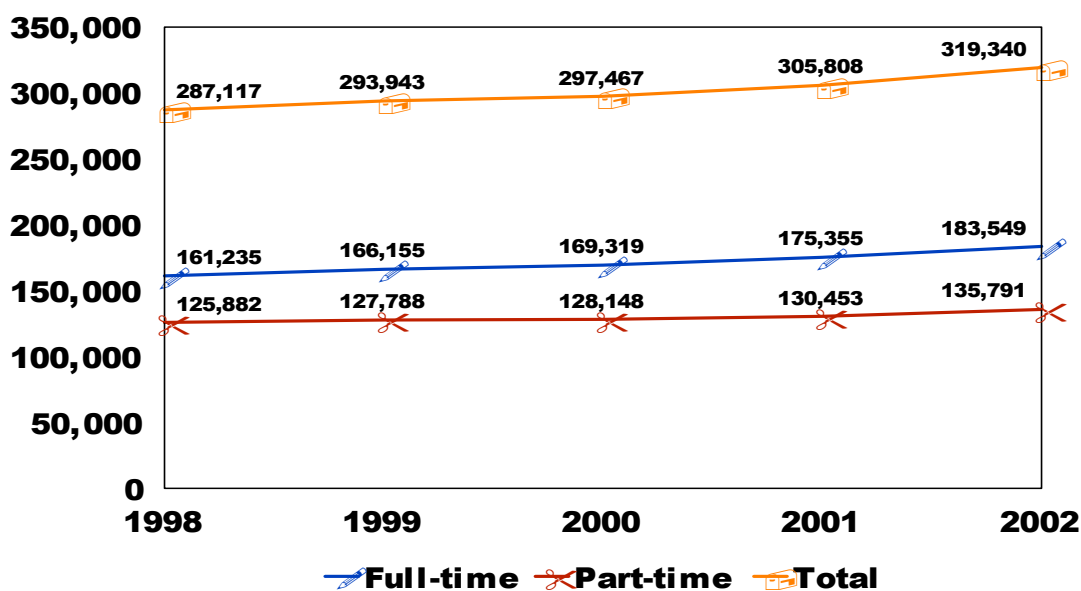
Missouri citizens have access to a wide range of postsecondary institutions. They include public and independent two-year associate degree granting colleges, public and independent baccalaureate, masters, and doctoral degree granting colleges and universities. In addition, there is a public associate degree granting technical college and numerous independent and for-profit technical schools. Missourians also have access to

several instructional sites offering courses and programs around the state as well as the programs, instructional, and training services offered through the extension divisions of Missouri's two land-grant institutions (University of Missouri and Lincoln University).

In Fall 2002, Missouri's public and independent two- and four-year colleges and universities enrolled nearly 320,000 students. Of this number, 43 percent are enrolled part-time (less than 12 hours a semester for undergraduate students, nine hours for graduate students). This number does not include the additional 55,000 individuals enrolled in the for-profit proprietary schools certified to operate in Missouri.

In Missouri, among 18 to 24 year-olds whose parents have some college, 55 percent enroll in college, compared to 19 percent of those whose parents did not attend college (*Measuring Up 2002*, National Center for Public Policy and Higher Education). The National Center also reports in *Measuring Up 2002* that Missouri lags behind many states on measures of participation in higher education and awarded the state a grade of C+ for participation.

Total Full- and Part-time Headcount Enrollment at Missouri Public and Independent Two- and Four-year Institutions, Fall 1998 to Fall 2002



Source: DHE02

Missouri Department of Higher Education

As the following report indicates, a smaller percentage of high school freshmen enroll in college within four years in any state compared to states that have the highest percentage of high school freshmen enrolling in college within four years (39 percent in Missouri compared to 54 percent in the high participation states).

Data provided to the Governor's Commission on the Future of Higher Education in April 2003 by the National Center for Higher Education Management Systems show the educational attainment of ninth graders in Missouri compared to the top performing participation states, and for the nation.

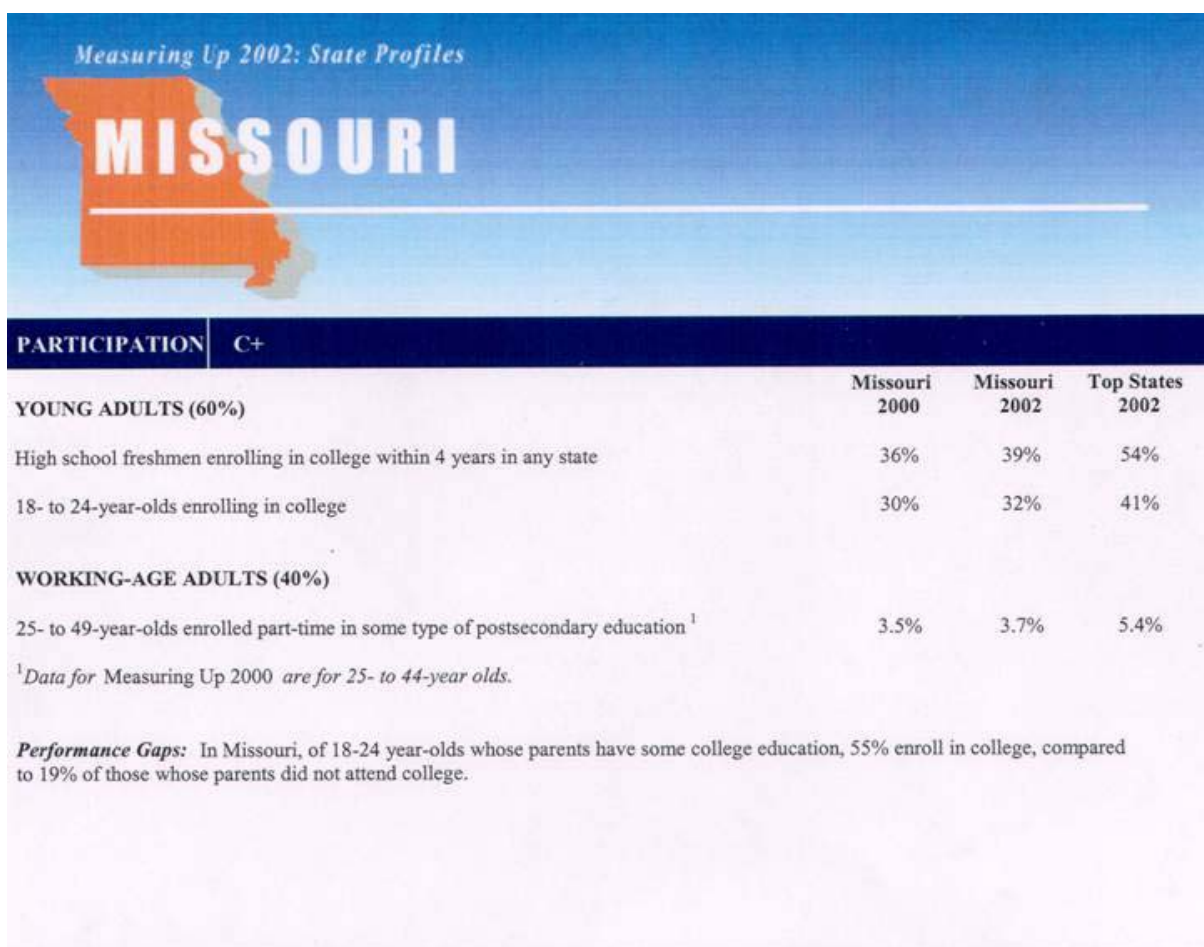
Educational Attainment of Ninth Graders

Level of Education Completed by 9 th Graders	Missouri	Nation	Top Performing Participation States
Graduate from High School	73	67	84
Enter College	39	38	58
Enroll Sophomore Year	26	27	42
Graduate Within Six Years	18	18	28

Source: 2000 U.S. Census and National Center for Education Statistics

Although Missouri is competitive in the proportion of ninth graders who graduate from high school, the proportion enrolling in postsecondary education and returning for a second year of study, while comparable to the nation, is behind the top performing states by some 20 students.

Among working-age adults, only 3.7 percent of Missouri citizens between the ages of 25 and 49 were enrolled in some type of postsecondary education program in 2002 compared to 5.4 percent of the working-age adults in states with high rates of participation in postsecondary education.



Participation in Missouri's Public Two-year Colleges

Many states with comparatively higher rates of participation in postsecondary education have built large community and technical college delivery systems enrolling proportionately more students than Missouri. Although Missouri has a number of well established public two-year community colleges which offer courses and programs on their main campuses and at instructional sites, including many Area Vocational Schools, Missouri by comparison, enrolls only 39 percent of all its students in public two-year colleges compared to a national average of 47 percent. The following table shows the proportion of Missouri's total higher education enrollment in public two-year colleges compared to the average percentage for the nation and selected states.

**Percentage of Students Enrolled in Community Colleges
In Missouri, Nationally, and Selected States**

	Percentage of Enrollment in Public Two-year Colleges
Missouri 1999	39 %
Missouri 2001	39 %
National Average (1999)	47 %
California (1999)	68 %
Washington (1999)	65 %
Illinois (1999)	64 %
Florida (1999)	58 %
Texas (1999)	51 %
North Carolina (1999)	50 %
Nebraska	40 %

Source: 2001 *Digest of Educational Statistics*, National Center for Education Statistics and 2001 Missouri Department of Higher Education *Statistical Summary*.

To increase access to and participation in the state's system of higher education and postsecondary workforce development programs and services, Missouri needs to expand its public two-year sector if the state's workforce is reach the level of educational attainment necessary to compete with the workforce of many other states.

Participation by Ethnic Category

The educational attainment of ethnic minority populations will need to increase for Missouri, and the nation, to benefit from an entire workforce that is well-educated and highly trained. To accomplish this, ethnic minority populations will need increased access to and participation in postsecondary education and training opportunities. It should be higher compared to the proportion of the population they represent as shown in the following table.

National Statistics	Caucasian	African-American	Hispanic
18 Year Olds	80.8 %	12.7 %	3.0 %
High School Graduates	84.3 %	12.6 %	1.2 %
First-Time Freshmen	81.5 %	9.9 %	1.8 %
All Other Undergraduate Students	80.2 %	9.5 %	2.0 %
Two-year College Graduates	84.3 %	10.1 %	1.9 %
Four-year College Graduates	81.5 %	6.8 %	2.5 %

Source: National Center for Education Statistics (NCES)-Common Core Data, IPEDS Fall Enrollment and Completions Surveys, US Census Bureau

Workforce Credentials

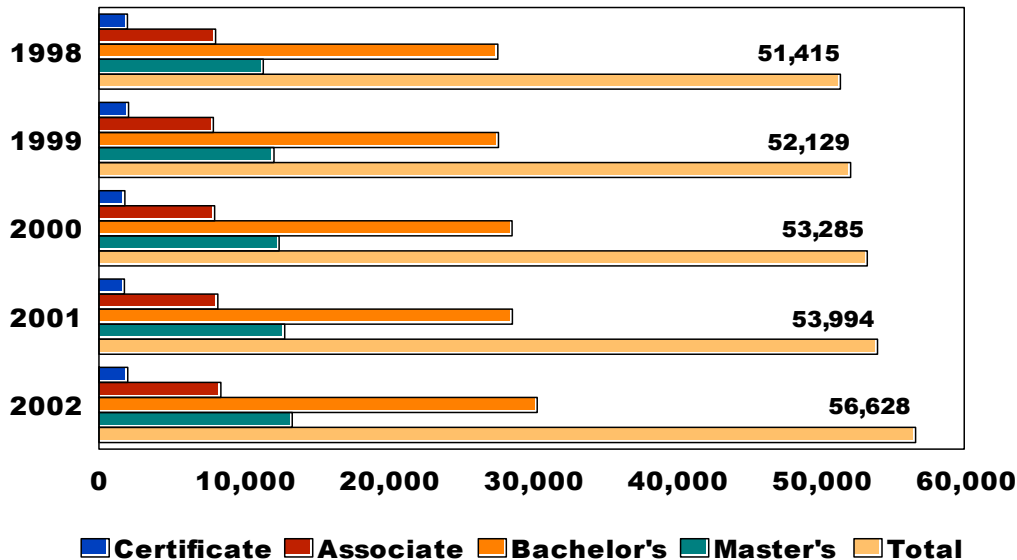
Individuals hold a variety of credentials certifying they have completed a course of study, training or degree program. Credentials also certify an individual as having passed an examination required for work. Such certifications run the full range of knowledge and skill areas, from those related to the front wheel alignment of an a car or truck to those for the practice of medicine.

For the most part, information about certifications is not uniformly or routinely collected or reported by a centralized depository of this information, but rather is dispersed across a variety of licensure and certification boards.

In 2002, Missouri's public and independent colleges and universities conferred more than 56,500 degrees and certificates. This is 10 percent increase over the more than 51,400 degrees conferred in 1998.

The largest number of degrees conferred in Missouri are at the baccalaureate level. Many of the technical skills employers need from their employees, however, are taught at community and technical colleges through certificate and Associate of Applied Science degree programs. The relatively low number of associate degrees conferred is consistent, however, with the relatively low proportion of students in Missouri enrolled in the state's public two-year community and technical colleges.

Total Degrees Conferred by Missouri Public and Independent Two- and Four-year Institutions, FY 1998 to FY 2002



Source: IPEDS C

Missouri Department of Higher Education *Statistical Summary*, 1998, 1999, 2000, 2001, 2002

Public College Graduates Working In Missouri

Between 1987 and 2002, Missouri's public colleges and universities awarded degrees to 247,411 individuals of whom 158,457, (64 percent) held salaried positions in Missouri in 2002. As shown below, the proportion of degree recipients working in Missouri varies by degree level.

Missouri Public College Graduates (1978 to 2002) Working in Missouri in 2002

Degree Level	Number of Public College & University Graduates 1978 to 2002	Number of 1978 to 2002 Graduates Working in Missouri in 2002	Percent Graduates Working In Missouri in 2002
One and Less Than Two-year Certificates	10,652	7,738	72.3 %
Two-year Certificates and Associate Degrees	51,178	38,854	75.9 %
Bachelor	139,643	85,898	61.5 %
Post Bachelor	3,651	2,443	66.9 %
Master's and Education Specialist	33,565	19,674	58.6 %
Doctorate and First Professional	8,722	3,850	43.8 %
Total	247,411	158,47	64.0 %

Source: Enhanced Missouri Student Achievement Study and Data Maintained by the Missouri Department of Labor

The largest percentage of graduates who remain in Missouri to work are those with two-year associate degrees or less. Typically these individuals are less mobile compared to graduates with baccalaureate or higher degrees who often seek jobs anywhere in the United States. This is particularly noted among those who receive doctoral or first professional degrees. Nearly 44 percent of the doctoral and first-professional degree recipients remain in Missouri compared to nearly 76 percent of those receiving an associate degree.

Public College Graduates from Selected Programs Working In Missouri

The Missouri Department of Higher Education has collected information on public college graduates by their field of study and degree since the 1994 – 1995 academic year. Important to the state's workforce development is the number graduating from programs critical to the state's initiatives to strengthen businesses and industries related to Advanced Manufacturing, Life Sciences, and Computer and Information Sciences. The tables below show the number of graduates, from selected areas of study, by degree level from Missouri's public two- and four-year colleges, the number and percentage of graduates working in Missouri in 2002 who are graduates of those programs supporting these three clusters of Missouri businesses and industry.

Agriculture Business and Production

Degree Level	Number of Public College & University Graduates 1994-95 to 2001-02	Number of 1994 to 2002 Graduates Working in Missouri in 2002	Percent Graduates Working In Missouri
One and Less Than Two-year Certificates	49	30	61 %
Two-year Certificates and Associate Degrees	487	357	73 %
Bachelor	1,221	758	62 %
Post Bachelor	0	0	0 %
Master's and Education Specialist	73	23	32 %
Doctorate and First Professional	43	12	28 %
Total	1,873	1,180	63 %

Agricultural Sciences

Degree Level	Number of Public College & University Graduates 1994-95 to 2001-02	Number of 1994 to 2002 Graduates Working in Missouri in 2002	Percent Graduates Working In Missouri
One and Less Than Two-year Certificates	0	0	0 %
Two-year Certificates and Associate Degrees	100	67	67 %
Bachelor	2,237	1,292	58 %
Post Bachelor	0	0	0 %
Master's and Education Specialist	191	74	39 %
Doctorate and First Professional	88	23	26 %
Total	2,616	1,456	56 %

Computer and Information Sciences

Degree Level	Number of Public College & University Graduates 1994-95 to 2001-02	Number of 1994 to 2002 Graduates Working in Missouri in 2002	Percent Graduates Working In Missouri
One and Less Than Two-year Certificates	104	72	69 %
Two-year Certificates and Associate Degrees	356	287	81 %
Bachelor	3,059	1,804	59 %
Post Bachelor	0	0	0 %
Master's and Education Specialist	693	177	26 %
Doctorate and First Professional	19	2	11 %
Total	4,231	2,342	55 %

Engineering

Degree Level	Number of Public College & University Graduates 1994-95 to 2001-02	Number of 1994 to 2002 Graduates Working in Missouri in 2002	Percent Graduates Working In Missouri
One and Less Than Two-year Certificates	0	0	0 %
Two-year Certificates and Associate Degrees	101	265	64 %
Bachelor	6,614	2,943	44 %
Post Bachelor	18	6	33 %
Master's and Education Specialist	2,869	709	25 %
Doctorate and First Professional	493	74	15 %
Total	10,095	3,797	38 %

Engineering Related Technologies

Degree Level	Number of Public College & University Graduates 1994-95 to 2001-02	Number of 1994 to 2002 Graduates Working in Missouri in 2002	Percent Graduates Working In Missouri
One and Less Than Two-year Certificates	462	362	78 %
Two-year Certificates and Associate Degrees	1,653	1,267	77 %
Bachelor	1,820	1,060	58 %
Post Bachelor	0	0	0 %
Master's and Education Specialist	369	138	38 %
Doctorate and First Professional	0	0	0 %
Total	4,298	2,827	66 %

Biological Sciences/Life Sciences

Degree Level	Number of Public College & University Graduates 1994-95 to 2001-02	Number of 1994 to 2002 Graduates Working in Missouri in 2002	Percent Graduates Working In Missouri
One and Less Than Two-year Certificates	0	0	0 %
Two-year Certificates and Associate Degrees	42	31	74 %
Bachelor	4,866	2,651	54 %
Post Bachelor	0	0	0 %
Master's and Education Specialist	484	214	44 %
Doctorate and First Professional	222	53	24 %
Total	5,614	2,949	53 %

Mathematics

Degree Level	Number of Public College & University Graduates 1994-95 to 2001-02	Number of 1994 to 2002 Graduates Working in Missouri in 2002	Percent Graduates Working In Missouri
One and Less Than Two-year Certificates	0	0	0 %
Two-year Certificates and Associate Degrees	11	9	55 %
Bachelor	736	407	55 %
Post Bachelor	0	0	0 %
Master's and Education Specialist	247	112	45 %
Doctorate and First Professional	80	19	24 %
Total	1,074	547	51 %

Physical Sciences

Degree Level	Number of Public College & University Graduates 1994-95 to 2001-02	Number of 1994 to 2002 Graduates Working in Missouri in 2002	Percent Graduates Working In Missouri
One and Less Than Two-year Certificates	85	57	67 %
Two-year Certificates and Associate Degrees	6	5	83 %
Bachelor	1,720	807	47 %
Post Bachelor	0	0	0 %
Master's and Education Specialist	428	135	32 %
Doctorate and First Professional	298	75	25 %
Total	2,537	1,079	43 %

Science Technologies

Degree Level	Number of Public College & University Graduates 1994-95 to 2001-02	Number of 1994 to 2002 Graduates Working in Missouri in 2002	Percent Graduates Working In Missouri
One and Less Than Two-year Certificates	16	11	69 %
Two-year Certificates and Associate Degrees	61	51	84 %
Bachelor	19	9	47 %
Post Bachelor	0	0	0 %
Master's and Education Specialist	0	0	0 %
Doctorate and First Professional	0	0	0 %
Total	96	71	74 %

Mechanics and Repairers

Degree Level	Number of Public College & University Graduates 1994-95 to 2001-02	Number of 1994 to 2002 Graduates Working in Missouri in 2002	Percent Graduates Working In Missouri
One and Less Than Two-year Certificates	185	131	71 %
Two-year Certificates and Associate Degrees	912	727	80 %
Bachelor	0	0	0 %
Post Bachelor	0	0	0 %
Master's and Education Specialist	0	0	0 %
Doctorate and First Professional	0	0	0 %
Total	1,097	858	78 %

Precision Production Trades

Degree Level	Number of Public College & University Graduates 1994-95 to 2001-02	Number of 1994 to 2002 Graduates Working in Missouri in 2002	Percent Graduates Working In Missouri
One and Less Than Two-year Certificates	140	124	89 %
Two-year Certificates and Associate Degrees	956	800	84 %
Bachelor	562	353	63 %
Post Bachelor	0	0	0 %
Master's and Education Specialist	0	0	0 %
Doctorate and First Professional	0	0	0 %
Total	1,658	1,277	77 %

Health Professions and Related Sciences

Degree Level	Number of Public College & University Graduates 1994-95 to 2001-02	Number of 1994 to 2002 Graduates Working in Missouri in 2002	Percent Graduates Working In Missouri
One and Less Than Two-year Certificates	3,012	2,428	81 %
Two-year Certificates and Associate Degrees	8,440	6,899	82 %
Bachelor	6,248	4,609	74 %
Post Bachelor	3	2	67 %
Master's and Education Specialist	2,830	1,908	67 %
Doctorate and First Professional	3,252	1,331	41 %
Total	23,785	17,177	72 %

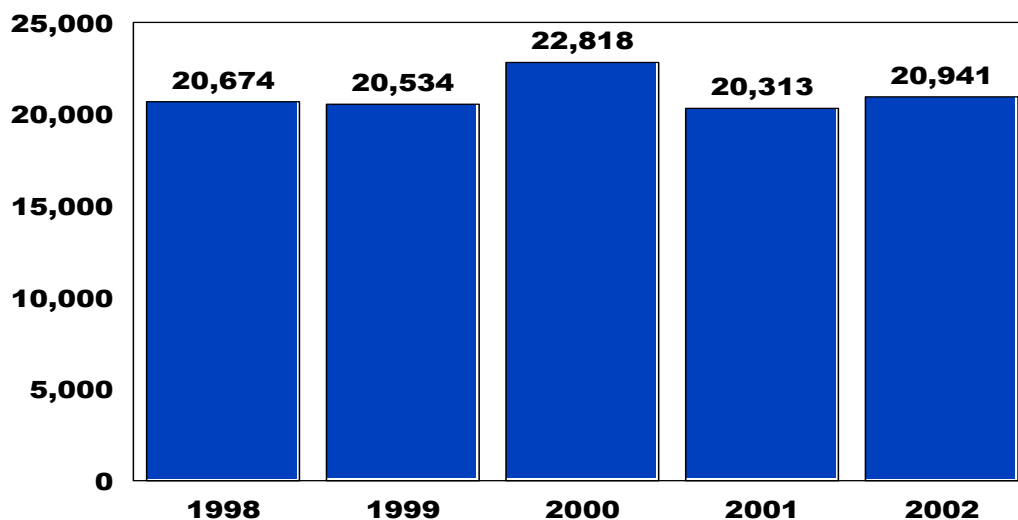
Source: For the above data, the number of graduates by field of study and degree level comes from the Missouri Department of Higher Education's Enhanced Missouri Student Achievement Study, 1994-95 to 2002-02. The number of graduates working in Missouri is determined from data maintained by the Division of Employment Security, Missouri Department of Labor, 1994 to 2002.

These data demonstrate that Missouri may be producing too few graduates in fields related to advancing the state's initiatives in Advanced Manufacturing, Life and Information Sciences to sustain desirable growth among these Missouri businesses and industries. The data also show that a number of well-educated and highly trained graduates from areas of study supporting these industries, particularly at the master's and doctoral degree level, are not finding jobs in Missouri, e.g., engineering, biological/life sciences, mathematics, and physical sciences.

Student Transfer

Nearly 21,000 or one-out-of-sixteen students (6.5 percent) of the some 320,000 students enrolled in Missouri's public and independent colleges and universities in any given fall semester are transfer students. That is, they were enrolled at a different in- or out-of-state college or university the previous spring semester.

Total Degree-seeking and Nondegree-seeking Undergraduate Transfer Students, Fall 1998 to Fall 2002



Source: DHE07-2

Missouri Department of Higher Education *Statistical Summary* for 1998, 1999, 2000, 2001, 2002

The following table shows the exchange or transfer of students among and between the state's colleges and universities between Spring 2001 (transferring from) and Fall 2002 (transferring to). The single largest source of transfer students is from out-of-state colleges and universities (6,373). Collectively, however, the state's public baccalaureate and higher degree granting colleges and universities took the largest number of transfers (8,780). The table also shows that a large number of students transfer within sectors (1,287 from public baccalaureate to public baccalaureate) and among levels of institutions (1,409 from public baccalaureate to public certificate and associate degree-granting colleges and universities). The number of student transfers and the pattern of student transfer demonstrate that students are making significant choices about where they will enroll. Large numbers of students do not enroll and graduate from the institution where they initially enrolled in college, often choosing a low cost public community college for their initial enrollment in college. The data also suggest that

many Missouri high school graduates initially attend college in another state, and for a variety of reasons, cost is one, return to Missouri to complete their college education.

Student transfer is a fairly regional phenomenon. For example, within the public sector of colleges and universities, students attending public two-year certificate and associate degree granting community colleges often transfer to a regionally located public four-year baccalaureate and higher degree granting college or university.

The chart, “Where the Majority of Public Two-year Transfer Students Attend Public Four-year Institutions” demonstrates this regional transfer phenomenon. It shows where 3,180 public two-year college students transferred from, to public four-year baccalaureate and higher degree-granting colleges and universities between Spring 2001 and Fall 2001.

Undergraduate Transfer, Spring 2001 to Fall 2002
Transferring To:

Transferring From:	Public Baccalaureate & Higher Degree Granting Institutions	Public Certificate & Associate Degree Granting Institutions	Private Not-for-Profit (Independent) Baccalaureate Degree Granting Institutions	Private Not-for-Profit (Independent) Certificate & Associate Degree Granting Institutions	Total
Public Baccalaureate & Higher Degree Granting Institutions	1,287	1,409	951	0	3,647
Public Certificate & Associate Degree Granting Institutions	3,395	818	1,856	0	6,069
Private Not-for-Profit (Independent) Baccalaureate Degree Granting Institutions	716	857	506	0	2,079
Private Not-for-Profit (Independent) Certificate & Associate Degree Granting Institutions	33	10	15	92	150
Other Missouri Institutions	315	545	165	0	1,025
Out-of State	2,368	1,443	2,562	0	6,373
U.S. Territories	6	0	0	0	6
Foreign	186	82	81	0	349
Unknown	474	142	627	0	1,243
Total	8,780	5,306	6,763	92	20,941

Source: Department of Higher Education DHE07-2, Institutional Origin of Undergraduate Transfer Students, 2002

Where the Majority of Public Two-Year Transfer Students Attend Public Four-Year Institutions - Fall 2001

Public Two-Year College	Total Transfers	Central	Harris-Stowe	Lincoln	Mo. South	Mo. West	NW	SE	SW	Truman	UMC	UMKC	UMR	UMSL
Crowder	115				71%				15%					
East Central	122	11%						9%	20%		17%		12%	23%
Jefferson	154							37%			8%		9%	33%
Linn State	9	78%		11%	11%									
Metro CC - Blue River	9						100%							
Metro CC - Longview	370	41%							8%		7%	37%		
Metro CC - Maple Woods	186	24%				18%	9%		8%			33%		
Metro CC - Penn Valley	144	14%										65%		
Mineral Area	93							47%	15%		10%			12%
Moberly	111	21%								10%	48%			
North Central	94					35%	24%		10%		17%			
Ozarks Tech.	143								98%					
State Fair	133	59%							11%		13%			
St. Charles	261								10%		18%			58%
St. Louis CC - Flo. Valley	268		13%											65%
St. Louis CC - Forest Park	209		31%											54%
St. Louis CC - Meramec	612								10%		20%			51%
SW-West Plains	5	40%					20%	40%						
Three Rivers	142							72%	15%					
Total	3,180	12%	4%	1%	3%	3%	3%	10%	12%	1%	12%	10%	3%	27%

Data Source: Missouri Department of Higher Education.

Statistical Summary, 2002

Promoting Student Transfer

To promote and help students transfer credits among and between Missouri's postsecondary institutions, the Coordinating Board for Higher Education adopted "Guidelines for Student Transfer and Articulation Among Missouri Colleges and Universities" on June 8, 2000. The Coordinating Board's policy and guidelines address a 42 credit hour general education component of a baccalaureate degree.

The statewide general education policy requires institutions to design and offer a general education program that includes a minimum of 42 semester-hours of credit related to state-level goals and competencies in agreed upon skill and knowledge areas. The skill

areas include communicating, higher-order thinking, managing information, and valuing. The knowledge areas included the social and behavioral sciences, humanities and fine arts, mathematics, life and physical sciences.

All Missouri public institutions and each independent or proprietary signatory institution have the opportunity and responsibility to exercise their academic and institutional autonomy to design and promulgate a general education program that supports their respective institutional mission and assist students in meeting the 42 semester-hours of general education credit. Under special circumstances, institutions may establish specialized articulation programs related to the associate of science (AS) and associate of applied science (AAS) degrees. The Coordinating Board's policy is silent with respect to how selected non-credit experiences, such as apprenticeship programs and other types of training are to be treated with regard to credit transfer.

General Education Equivalency Diploma (GED)

For some individuals, the first workforce-related credential they receive is the General Education Equivalency Diploma (GED). Based on a prescribed course of study and assessment at the end, the GED provides high school drop outs and adults with the opportunity of completing an equivalent high school diploma.

Data provided by the GED Testing Service and the Western Interstate Commission on Higher Education (WICHE) indicate that participation and completion of the GED in Missouri lags the national average. For example, in 2000, Missouri awarded 38.9 GED's per 1,000 18 to 24 year olds compared to 39.6 GED's per 1,000 18 to 24 year olds nationally. In 2001, Missouri awarded GED's to the equivalent of 16.9 percent of all high school completers compared to 18.7 percent nationally.

Monitoring enrollments of GED recipients in Missouri's public two- and four-year colleges and universities has been done by the Missouri Department of Higher Education since academic year 2000. These data show that enrollments of GED recipients in the state's public two- and four-year colleges and universities has been increasing. There may be several reasons for this, including an increasing number of enrolled home schooled students, and efforts by the Coordinating Board for Higher Education to encourage the state's public two-year community colleges to provide access to their instructional and training programs for GED recipients. It may also be a function of the colleges and universities simply getting better at identifying GED recipients and providing these data to the Department of Higher Education.

Institution	First-Time Freshmen GED Students Fall 2000	First-Time Freshmen GED Students Fall 2001	First-Time Freshmen GED Students Fall 2002	All GED Students Fall 2000	All GED Students Fall 2001	All GED Students Fall 2002
Harris-Stowe	NA	NA	NA	NA	NA	NA
Missouri Southern			82			361
Missouri Western	92	52	49	271	193	196
Central Missouri	45	48	26	184	197	173
Northwest Missouri	5	7	5	5	7	5
Southeast Missouri	NA	NA	NA	NA	NA	NA
Southwest Missouri	1	48	40	2,784	281	308
Lincoln University	32	25	17	123	97	84
Truman State	NA	NA	NA	NA	NA	NA
UM Columbia			17			100
UM Kansas City			16			167
UM Rolla			5			15
UM St. Louis			12			228
Crowder College	111	141	110	181	231	300
Jefferson College	96	112	108	323	333	340
Linn State Technical	30	28	19	53	40	47
Mineral Area College			69	6	1	311
Metropolitan Community Colleges	NA	NA	NA	NA	NA	NA
Moberly Area	69	84	88	215	265	282
St. Louis CC Flo. Valley		127	82		566	605

Institution	First-Time Freshmen GED Students Fall 2000	First-Time Freshmen GED Students Fall 2001	First-Time Freshmen GED Students Fall 2002	All GED Students Fall 2000	All GED Students Fall 2001	All GED Students Fall 2002
St. Louis CC Forest Park		170	156		840	893
St. Louis CC Meramec		189	128		868	864
State Fair Community College	150	94	74	303	310	297
Three Rivers Community College	89	80	63	272	297	288
Total	720	1,205	1,166	4,720	4,526	5,864

Source: Enhanced Missouri Student Achievement Study, 2000, 2001, 2002

Return on the Private and Public Investments in Higher/Postsecondary Education and Training

Further education and training beyond high school, and the completion of that education and training through certificate or degree completion benefits the individual through higher earnings, but also the state through higher per capita income for its citizens. Persons with higher levels of educational attainment earn more. As the following table demonstrates, state per capita income increases are higher for higher levels of educational attainment. These per capita income increases occur if Missouri were to increase by one percent the proportion of the state's population with the identified credential.

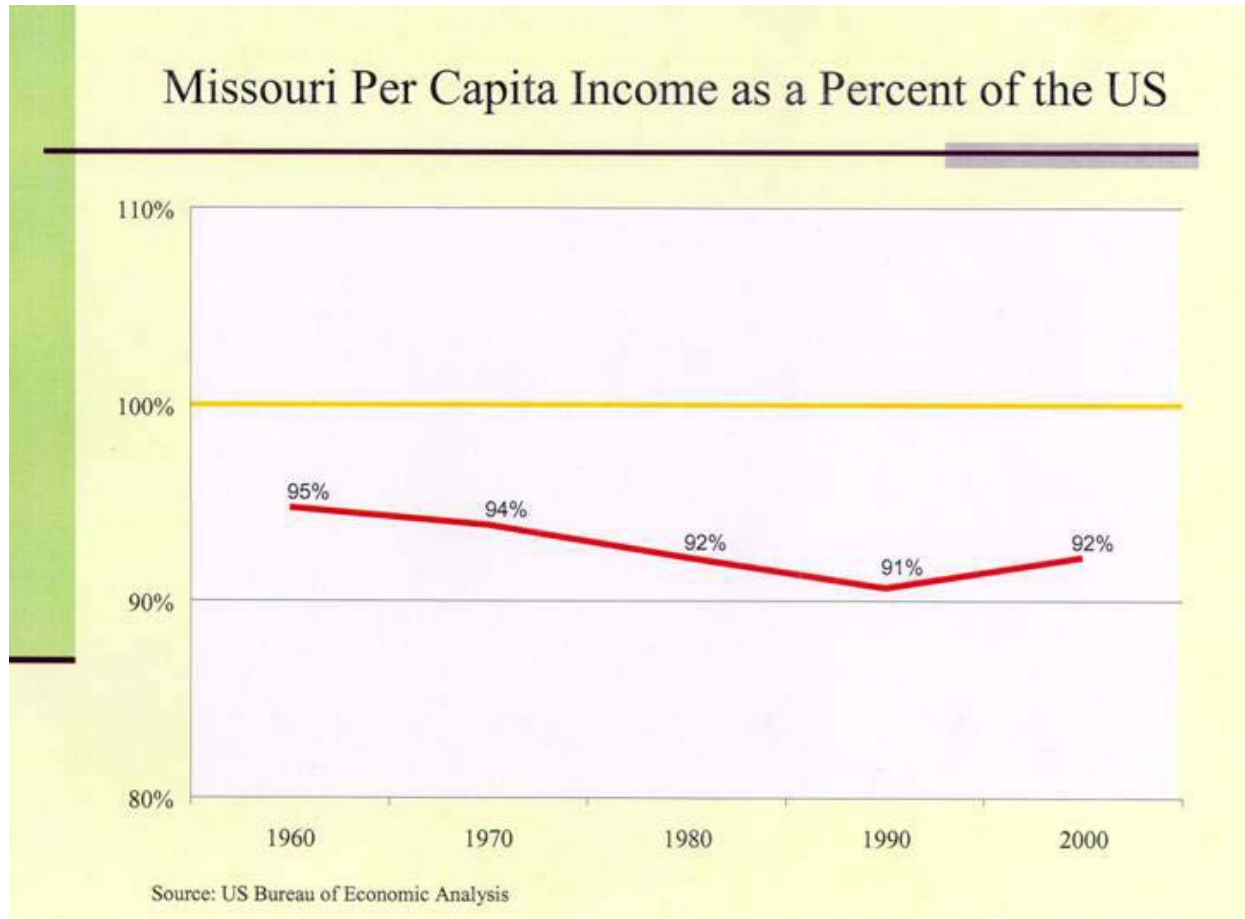
A One Percent Increase in the Proportion of Missouri's Population Would Increase State Per Capita Income by the Amount Shown

Level of Educational Attainment	Percentage Increase in Proportion of the Population with Level of Education	Increase in State Per Capita Income with Percentage Increase in Population with Level of Education
High School Diploma	1 percent	\$ 234
Associate Degree	1 percent	\$ 436
Bachelor's Degree	1 percent	\$ 530
Professional Degree or Higher	1 percent	\$3,446

Source: University of Missouri-Columbia Department of Economics, based on 2000 Census Data

Raising the state per capita income is important since Missouri's per capita income lags behind the national average and has for a number of years. Raising the per capita income

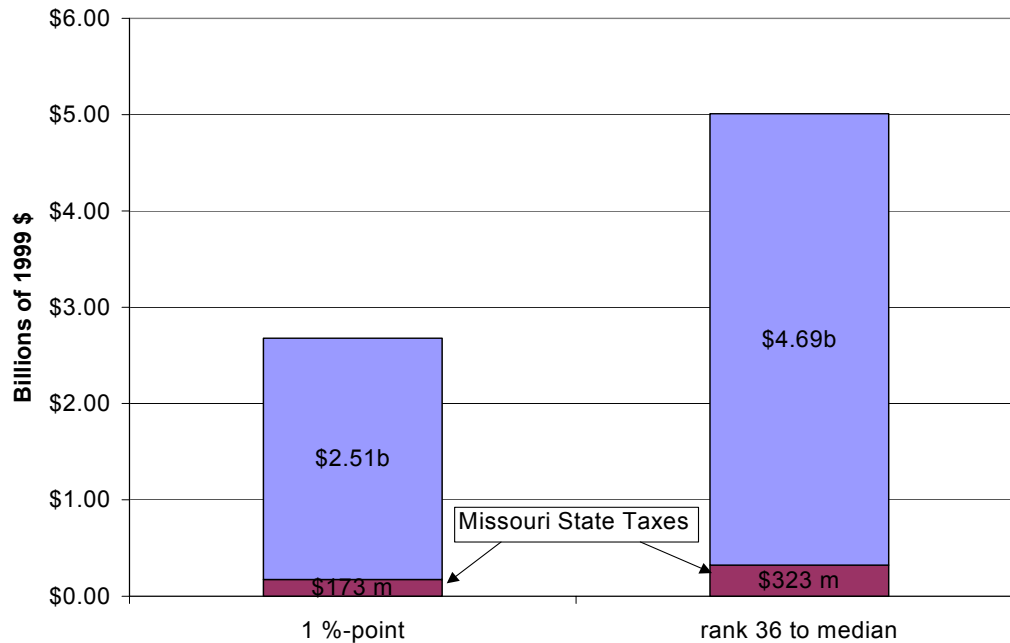
is important to the individuals who benefit from the higher earnings but for the state as well through the increase in taxes paid.



As demonstrated above, per capita income in Missouri varies from 91 percent to 95 percent of the national per capita income average. While this may be attributed to a somewhat lower cost of living in Missouri, it may also be linked to the lower than average educational attainment of Missouri citizens as indicated earlier in this report.

An example of raising the educational attainment of Missouri citizens is provided by data about Missourians holding the baccalaureate degree. Currently Missouri ranks 36th in the nation in terms of the proportion of the population that holds a bachelor's degree. As the following chart demonstrates, increasing the proportion of the state's population with a bachelors degree by one percent would infuse \$2.5 billion into the state's economy resulting in an estimated additional state revenue from taxes for the state of \$173 million. Moving from 36th in the nation in the percentage of bachelor degree holders the median of 25th would infuse \$4.69 billion into the state's economy resulting in an estimated addition state revenue from taxes of \$323 million.

Addition to Missouri Income by Raising College Attainment



Source: University of Missouri-Columbia Department of Economics, based on 2000 Census data

Summary

Missouri faces a number of workforce development challenges that the state's system of higher/postsecondary education can and should help meet. More students and working adults need to participate in the education and training opportunities provided by the state's postsecondary education providers. Higher rates of student retention and completion of programs of study need to be achieved. Increased placement of Missouri college and university graduates in Missouri jobs is vital to the state's workforce development system and state economy. By meeting these challenges, higher/postsecondary education can be a crucial partner in advancing Missouri ability to compete effectively in the knowledge-based, global economy.

Changing demands of the workforce require higher levels of education and training attainment. National studies show that the nation, including Missouri, will need to double the number of certificates and degrees conferred in any one year to provide employers access to a well-educated and highly-trained pool of prospective and incumbent employees. The Missouri Training and Employment Council (MTEC) needs to help develop relevant policy options that will need to be considered to address the issues discussed above that will help meet the goal of doubling the number of certificates and degrees conferred by Missouri's colleges, universities, and proprietary schools. These policy options by MTEC should be considered by the Missouri Commission on the Future of Higher Education, Coordinating Board for Higher Education, State Board of Education, Legislature, and Governor.